Patent Claims

1. A method for the nondestructive testing of a component (5), in particular of a gas turbine blade or vane (1), in which regions (9) of the component (5) which are degraded are determined by means of an eddy current measurement, at least two different measurement frequencies (f) being used for the eddy current measurement, the component (5) and the regions (9) not containing any ferromagnetic materials.

2. A method for the nondestructive testing of a component (5), in particular of a gas turbine blade or vane (1), in which regions (9) of the component (5) which are degraded are determined by means of an eddy current measurement, at least two different measurement frequencies (f) being used for the eddy current measurement, a low frequency (f) being used initially, followed by a high frequency (f).

3. A method for the nondestructive testing of a component (5), in particular of a gas turbine blade or vane (1), in which regions (9) of the component (5) which are degraded are determined by means of an eddy current measurement, at least two different measurement frequencies (f) being used for the eddy current measurement, the frequency (f) being changed continuously from a low frequency (f) to a high frequency (f) in one frequency scan.

4. The method as claimed in claim 1, 2 or 3, in which oxide regions (9) which are close to the surface and are composed of oxidized carbides of the component (5) represent the degraded regions (9).

5. The method as claimed in claim 1, 2, 3 or 4, in which the component (5) consists of a carbide-containing alloy.

6. The method as claimed in claim 1, 2 or 3, characterized in that the component (5) consists of a nickel- or cobalt-based superalloy.

7. The method as claimed in claim 1, 2 or 3, characterized in that sulfided regions (9) of the component (5) which lie close to the surface represent the degraded regions (9).

8. The method as claimed in claim 1, 2 or 3, characterized in that a measurement probe with coils in meandering form is used.

9. The method as claimed in claim 1, 2, 3 or 6, characterized in that the relative magnetic permeability of the component (5) is less than or equal to 1.2.

10. The method as claimed in claim 1, 2 or 3, characterized in that a frequency (f) for the eddy current measurement is in the range from 500 kHz to 35 MHz.

11. The method as claimed in claim 1, 2 or 3, characterized in that a measurement probe (11) for the eddy current measurement rests directly on the surface (3) of the component (5).

12. A method for producing a gas turbine blade or vane, in which a base body (5) of the gas turbine blade or vane (1) is cast, the surface (3) of the base body (5) is cleaned and activated for the application of a corrosion-resistant layer (7), and then the corrosion-resistant layer (7) is applied, with the surface (29) being tested for the presence of degraded regions by means of an eddy current measurement after the casting operation and prior to cleaning and activation.

13. The method as claimed in claim 12, characterized in that at least two different measurement frequencies (f) are used for the eddy current measurement.

14. The method as claimed in claim 12, in which the base body (5) consists of a nickel- or cobalt-base superalloy.

15. The method as claimed in claim 12, in which the protective layer (7) or the component (5) at least partially comprises an alloy of the MCrAlY type, where M is selected from the group consisting of (Fe, Co, Ni), Cr is chromium, Al is aluminum and Y is selected from the group consisting of (Y, La, rare earths).

16. The method as claimed in claim 1, 2, 3 or 12, in which the degraded regions (9) have a low electrical conductivity.

17. The method as claimed in claim 1 or 12, characterized in that a low frequency (f) is used initially, followed by a high frequency (f).

18. The method as claimed in claim 12, characterized in that the frequency (f) is changed continuously from a low frequency (f) to a high frequency (f) in one frequency scan.

19. The method as claimed in claim 1, 2, 3 or 12, characterized in that a measurement variable of the base material is measured in one of the first method steps, and a measurement variable of the degraded region is measured in a subsequent method step.

20. The method as claimed in claim 19, characterized in that the measurement variable changes during the eddy current measurement as a function of the frequency (f).

21. The method as claimed in claim 19, characterized in that the measurement variable is the magnetic permeability μ or the electrical conductivity (σ).